

## CLAIMS

1. An antibody with specific affinity for a characteristic epitope of the ED-B domain of fibronectin, wherein the antibody has improved affinity to said ED-B epitope.
2. The antibody according to claim 1, wherein the affinity is in the subnanomolar range.
3. The antibody according to claim 1, wherein the antibody recognizes ED-B(+) fibronectin.
4. The antibody according to claim 1, wherein said antibody is in the scFv format.
5. The antibody according to claim 4, the antibody being a recombinant antibody.
- 10 6. The antibody according to claim 4, wherein the affinity is improved by introduction of a limited number of mutations in its CDR residues.
7. The antibody according to claim 6, wherein the residues are residues 31-33, 50, 52 and 54 of VH and two residues 32 and 50 of its VL domain which have been mutated.
- 15 8. The antibody according to claim 1, wherein the antibody binds the ED-B domain of fibronectin with a Kd of 27 to 54 pM, most preferably with a Kd of 54 pM.
9. The antibody according to claim 1, being the antibody L19.
10. The antibody according to claim 1 with the following amino acid sequence:  
VH (SEQ ID NO:19)  
20 EVQLLES GGG LVQPGGSLRL SCAASGFTFS  
SFSMSWVRQA PGKGLEWVSS ISGSSGTTY  
ADSVKGRFTI SRDNSKNTLY LQMNSLRAED  
TAVYYCAKPF PYFDYWGQGT LVTVSS  
linker (SEQ ID NO:20)  
25 GDGSSGGSGGASTG  
VL (SEQ ID NO:21)  
EIVLTQSPGT LSLSPGERAT LSCRASQSVS  
SSYLAWYQQK PGQAPRELIY YASSRATGIP  
DRFSGSGSGT DFTLTISRLE PEDFAVYYCQ  
30 QTGRIPPTFG QGTKVEIK
11. The antibody according to claim 1, wherein the antibody is a functionally equivalent variant form of L19.
12. The antibody according to claim 9, wherein the antibody is radiolabelled.
13. The antibody according to claim 12, wherein the antibody is radioiodinated.

15. Method according to claim 14 for immunoscintigraphic detection of  
5 angiogenesis.

17. Method according to claim 14, wherein the antibody localizes the respective  
10 tissue three to four hours, most preferably 3 hours after its injection.

15 19. Method for diagnosis and therapy of tumours and diseases characterized by vascular proliferation wherein an antibody with specific affinity for a characteristic epitope of the ED-B domain of fibronectin, said antibody having improved affinity to said ED-B domain, is used.

21. Conjugates according to claim 20 wherein the molecule capable of inducing blood coagulation and blood vessel occlusion is a photoactive molecule.

25 23. Conjugates according to claim 22 wherein the photosensitizer absorbs at wavelength above 600 nm.

25. Conjugates according to claim 20 wherein the molecule capable of inducing blood coagulation and blood vessel occlusion is a radionuclide.

26. Conjugates according to claim 25 wherein the radionuclide is an  $\alpha$ - or  $\beta$ -emitting radionuclide.

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